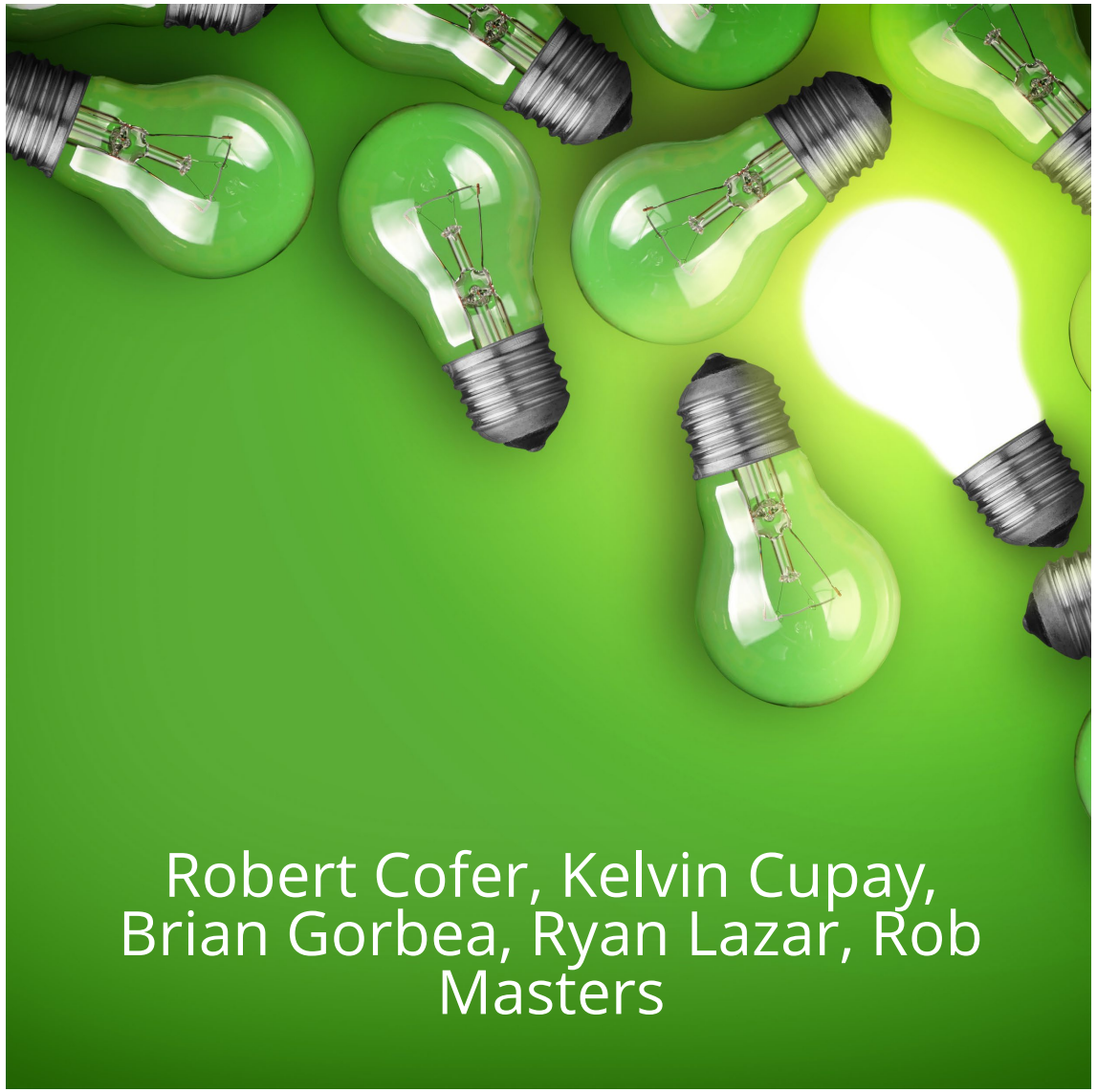
Deloitte.



Robert Cofer, Kelvin Cupay, Brian Gorbea, Ryan Lazar, Rob Masters

**Fraud Detection for Funbucks Financial Services**

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# Business Background

## Challenges

- Custom Retention
- Annual Savings

## AI Model

- Lacks Model
- Gap in Fraud Prevention

## Main Takeaway

**Enhance:**

- Customer Retention
- Promote Annual Savings

# Business Problem

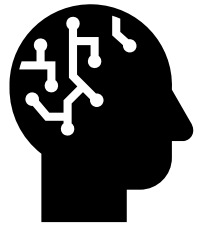
## Fraud

- Increase of 149%
- Increase of 83%
- $56 Billion Lose

**Fraud & AI**

## AI

- 300-Billion-Dollar-Impact
- Positive ROI
- Balance Technology & Stakeholder Interests
- Human Intervention



# Fraud's Business Impact


- Online scammers
- Additional vectors for fraud

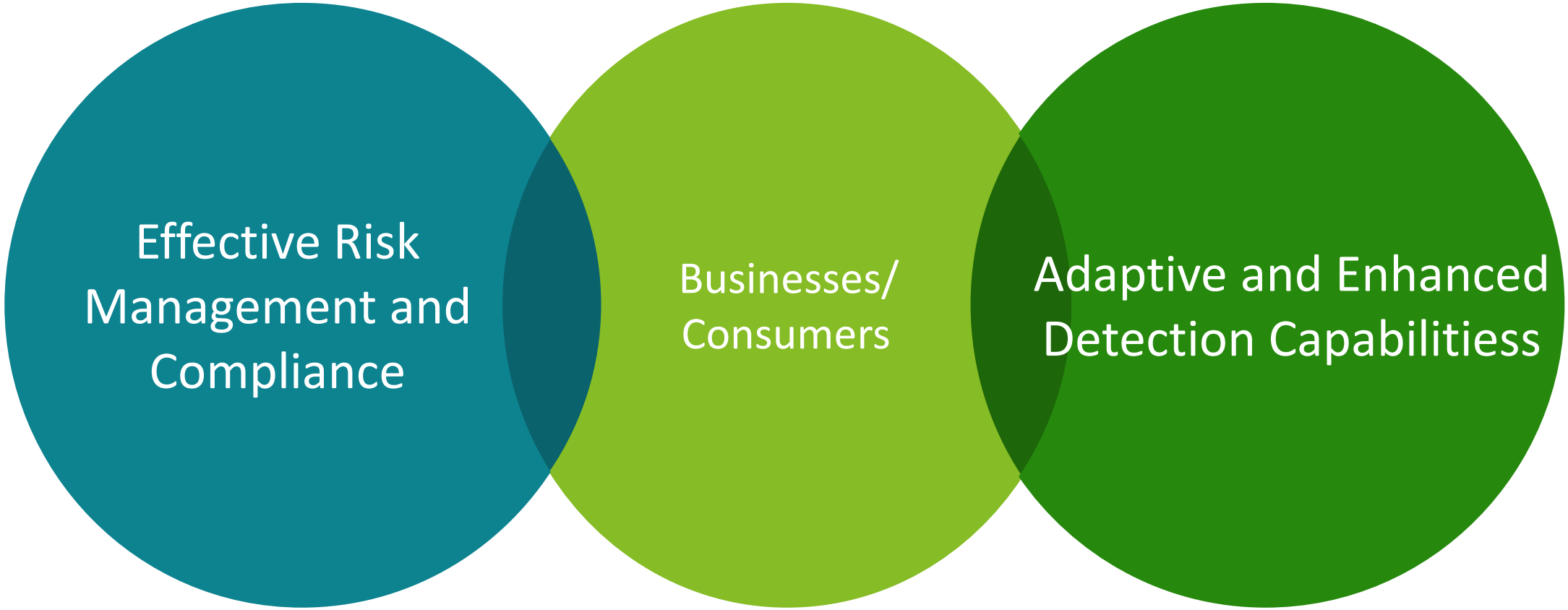
- New trends in fraud
- AI specialized tactics

- Fraud = customer dissatisfaction
- High income/net worth clients

- Growing fraud exposure

# Business/Consumer Needs For AI

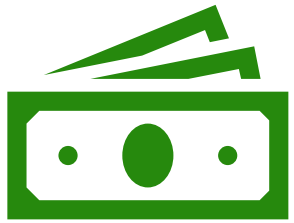
AI transforms banking fraud detection with real-time monitoring, dynamic security, and instant fraud identification, addressing the need for robust security measures and enhancing both business risk management and compliance, while also prioritizing a positive consumer experience by minimizing the impact of false positives.



# Objectives

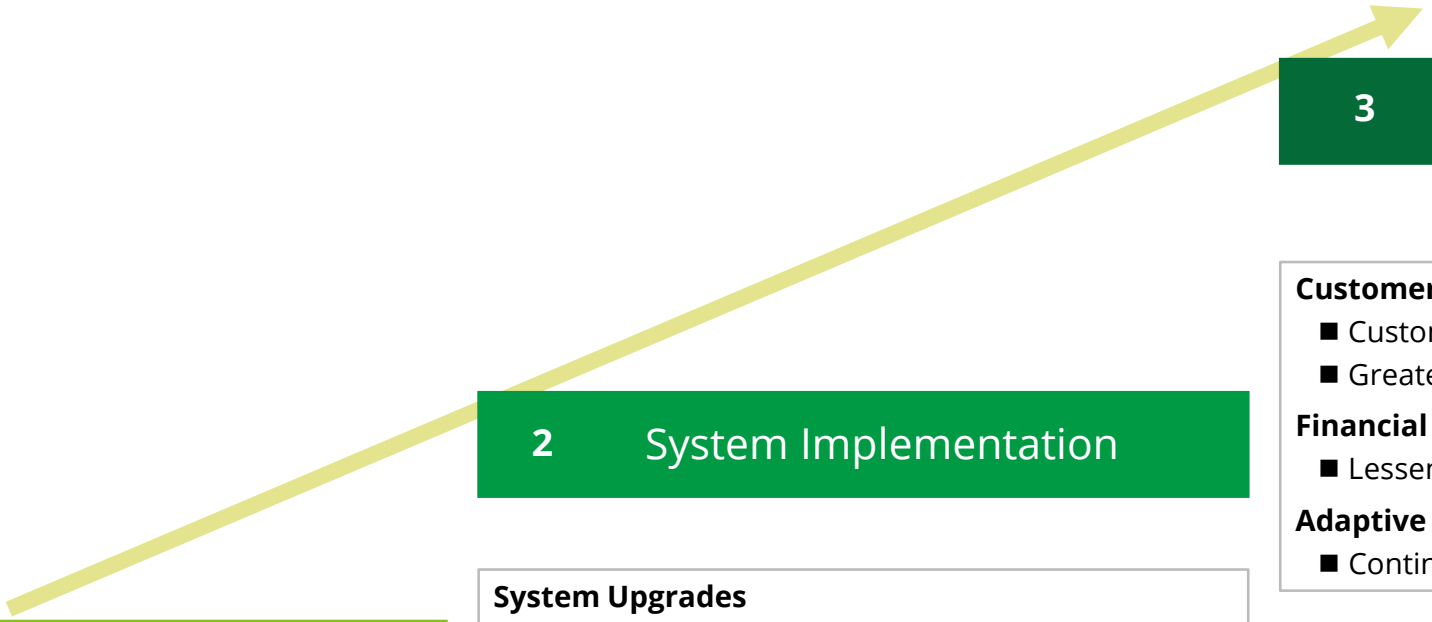
Fraud Detection

Customer Experience



Financial Security

# Timeline of Fraud Detection



**1 Current Legacy System**

**Customer Satisfaction**
- Lower satisfaction with fraud

**Fraud**
- Requires specialized agents
- Greater cost & risk

**2 System Implementation**

**System Upgrades**
- Historic data used
- Continued refinement
- Integration

**Specialized Staff**
- Dedicated specialists
- Continued monitoring
- Advancement in detection

**3 Full Integration**

**Customer Satisfaction**
- Customers retained
- Greater satisfaction

**Financial Security**
- Lessens the risk

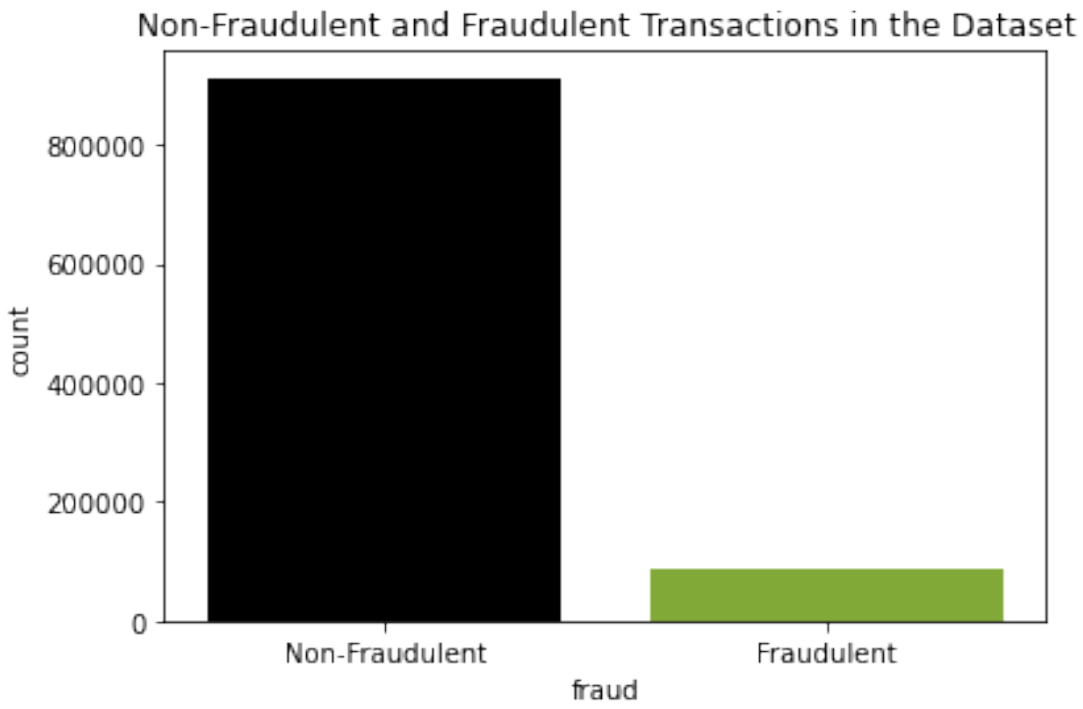
**Adaptive System**
- Continued model training

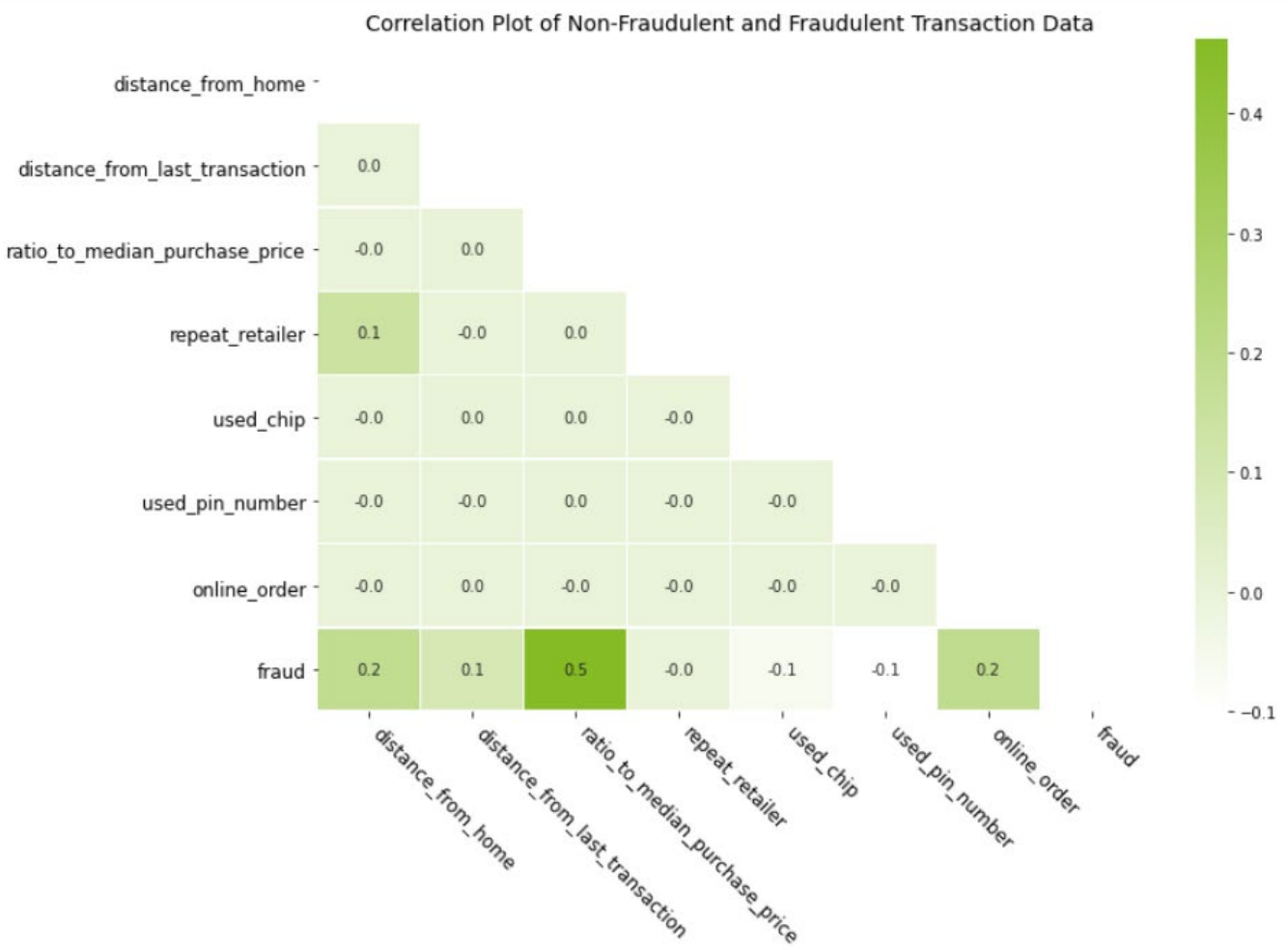
# Data Analysis

| Data Metrics | Definition |
| --- | --- |
| **Distance from home** | • The distance from home where the transaction happened |
| **Distance from the last transaction** | • The distance from last transaction happened |
| **Ratio to Median Purchase price** | • Ratio of purchased price transaction to median purchase price. |
| **Repeat Retailer** | • Is the transaction happened from same retailer |
| **Is Fraud?** | • Is the transaction fraud (1) or not fraud (0)? |

# Model Analysis

This EDA model displays the relationship of fraud (1) to the other attributes in the data.

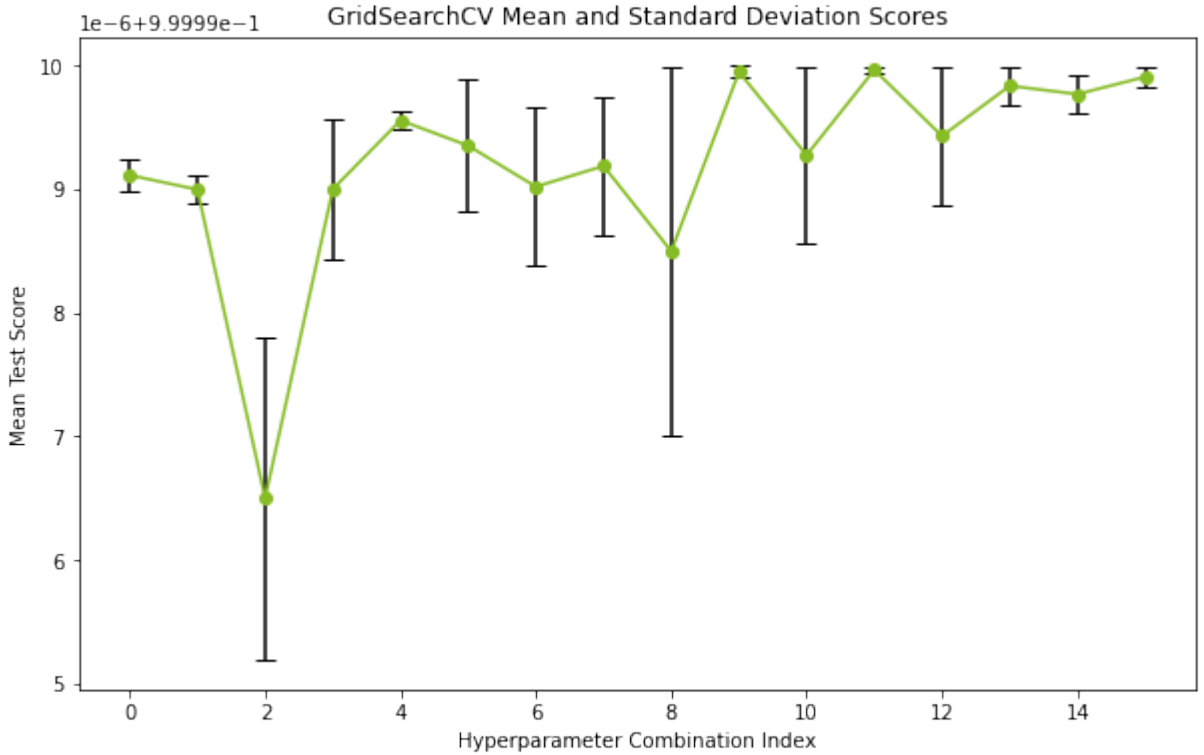


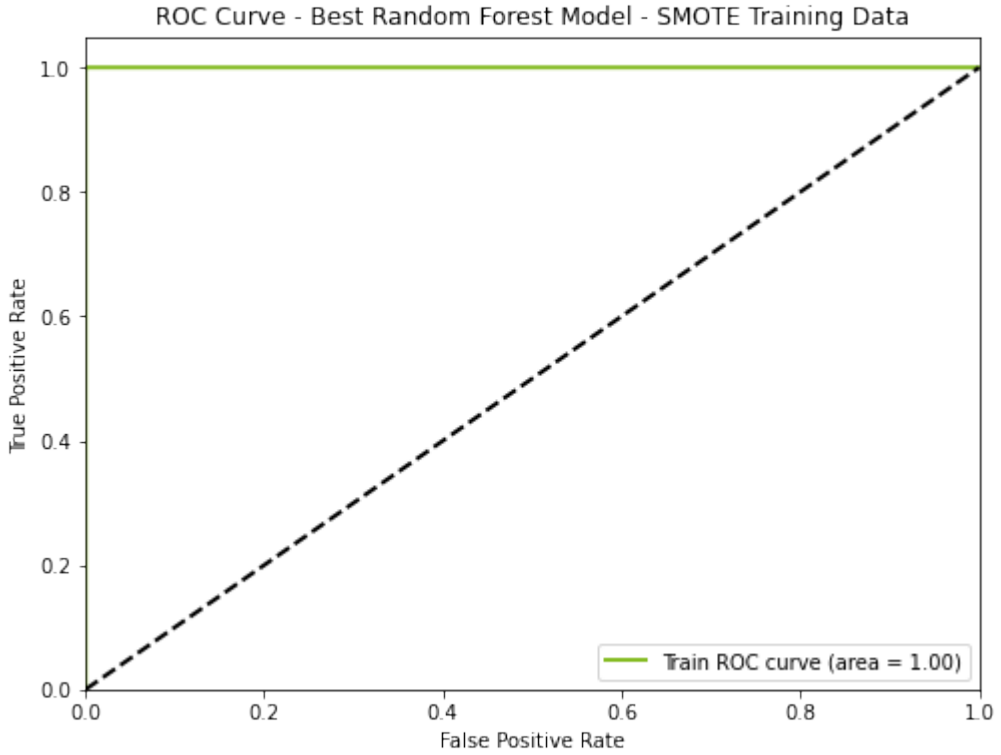



# Performance Metrics of Model with Balanced Data Using SMOTE and Cross-Validation

The Random Forest model showcases exceptional performance metrics after balancing the data using SMOTE. The GridSearchCV results indicate a successful cross-validation with optimal hyperparameter values selected. Mean cross-validated score: 1.0, Standard deviation of the cross-validated scores: 0.0.

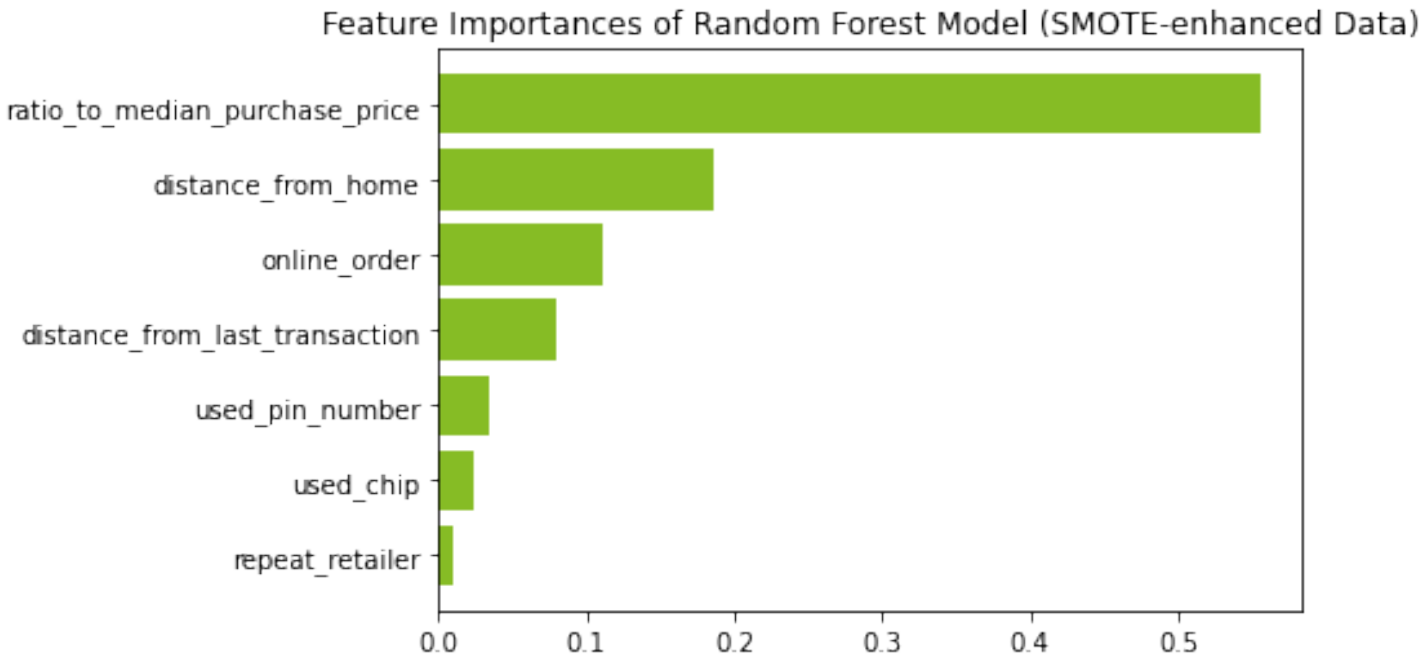
```
Random Forest Model with SMOTE Training Data Metrics:
Accuracy: 0.99997
Precision: 0.9999427819419809
Recall: 0.999713975173045
F1 Score: 0.999828365467132
ROC AUC: 0.9998542481456972
```

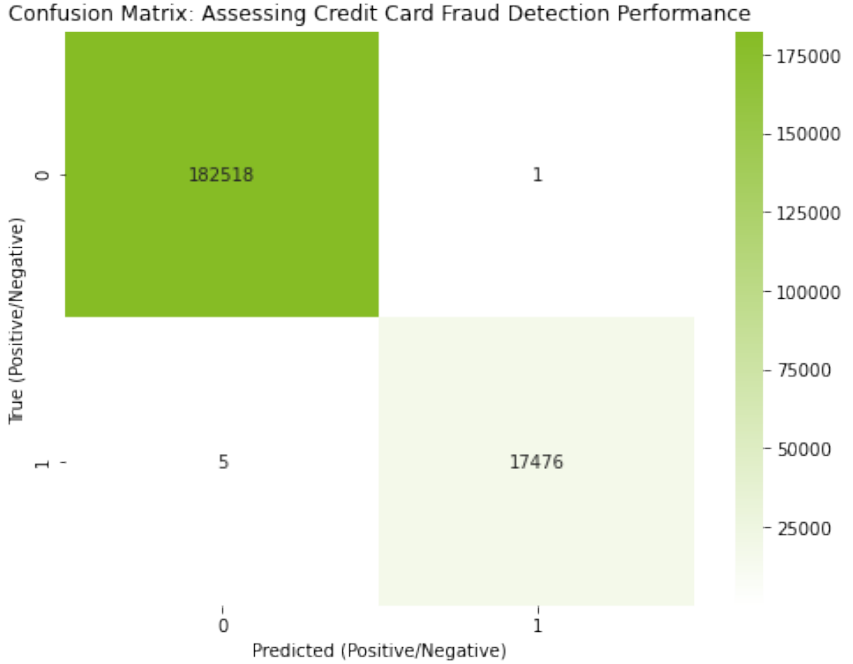


# Model Features & Confusion Matrix

This precision driven analysis reveals our model's exceptionally robust performance in safeguarding against fraudulent transactions.



# ROI & Risks

## ROI

Reduction in fraud related losses
Increase customer retention

## Model Accuracy

Continued investment in fraud detection
Update based on changing fraud patterns

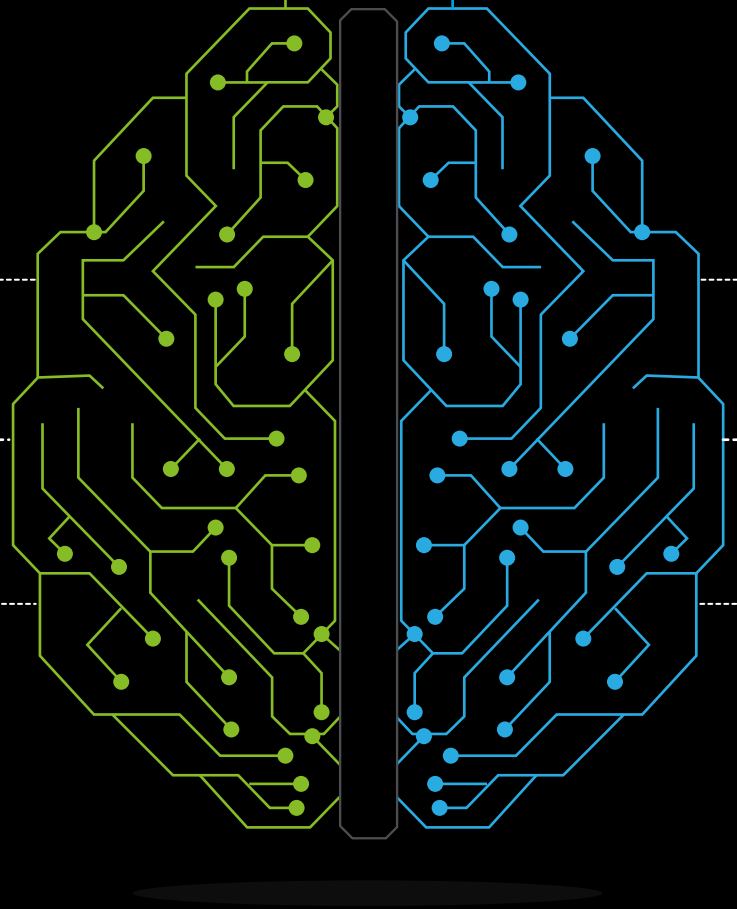
## Regulatory Compliance

Data protection and transparency

# False Positives and False Negatives

**False Positive**

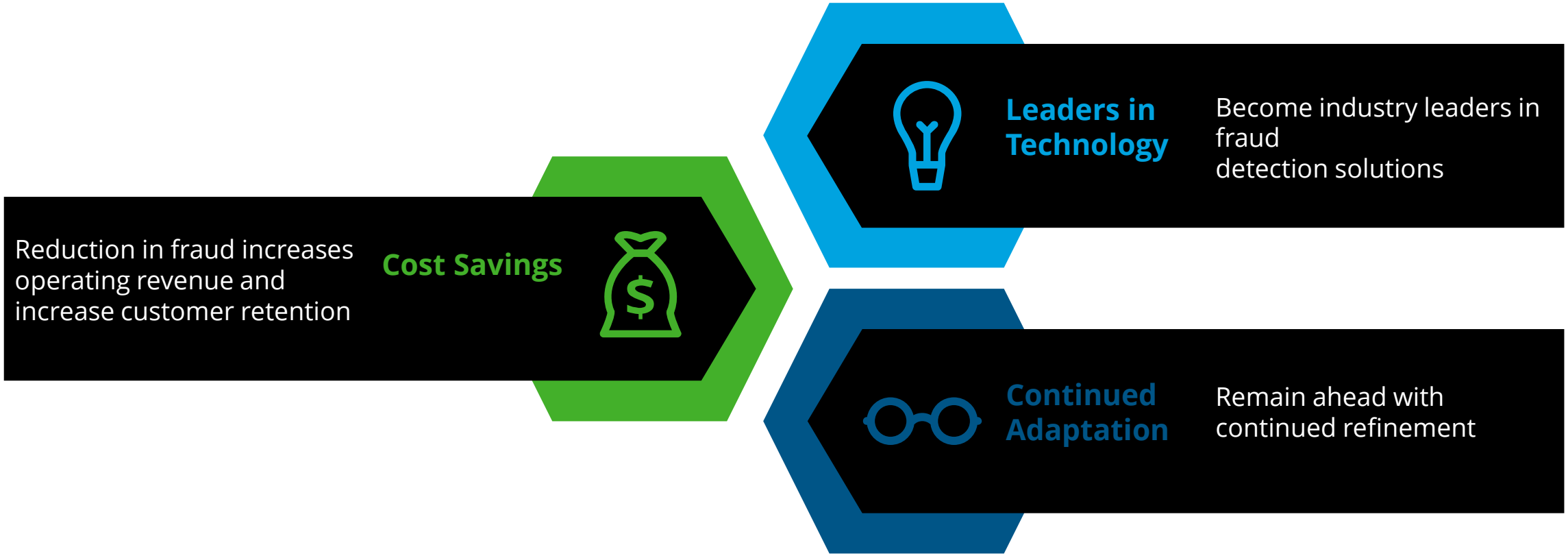
- Costs customer time
- Impact: Small
- Harms customer experience



**False Negative**

- Costs Funbucks money
- Impact: Major
- Damages Funbucks bottom line & customer experience

# Conclusion


Leaders in Technology
Become industry leaders in fraud detection solutions
Reduction in fraud increases operating revenue and increase customer retention
Cost Savings
Continued Adaptation
Remain ahead with continued refinement

Deloitte.

# Thank You!

# Questions?

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